

with patients and other health professionals, and to strengthen their understanding of professional ethics and practice management responsibilities. Pharmacists' training increasingly emphasizes direct patient care, as well as consultative services to other health professionals.

In the 1997-1998 academic year, 60 colleges of pharmacy awarded the Master of Science degree or the Ph.D. degree. Although a number of pharmacy graduates interested in further training pursue an advanced degree in pharmacy, there are other options. Some complete 1- or 2-year residency programs or fellowships. Pharmacy residencies are postgraduate training programs in pharmacy practice. Pharmacy fellowships are highly individualized programs designed to prepare participants to work in research laboratories.

Areas of graduate study include pharmaceuticals and pharmaceutical chemistry (physical and chemical properties of drugs and dosage forms), pharmacology (effects of drugs on the body), and pharmacy administration, including pharmacoeconomics and social-behavioral aspects of patient care.

Prospective pharmacists should have scientific aptitude, good communication skills, and a desire to help others. They must also be conscientious and pay close attention to detail, because the decisions they make affect human lives.

In community pharmacies, pharmacists usually begin at the staff level. After they gain experience and secure the necessary capital, some become owners or part owners of pharmacies. Pharmacists in chain drug stores may be promoted to pharmacy supervisor or manager at the store level, then to the district or regional level, and later to an executive position within the chain's headquarters.

Hospital pharmacists may advance to supervisory or administrative positions. Pharmacists in the pharmaceutical industry may advance in marketing, sales, research, quality control, production, packaging, and other areas.

Job Outlook

Employment of pharmacists is expected to grow slower than the average for all occupations through the year 2008, despite the increased pharmaceutical needs of a larger and older population, and greater use of medication.

Retail pharmacies are taking steps to increase their prescription volume to make up for declining dispensing fees. Automation of drug dispensing and greater use of pharmacy technicians will help them to dispense more prescriptions. The number of community pharmacists needed in the future will depend on the expansion rate of chain drug stores and the willingness of insurers to reimburse pharmacists for providing clinical services to patients taking prescription medications. With its emphasis on cost control, managed care encourages growth of lower-cost prescription drug distributors such as mail-order firms for certain medications. Slower employment growth is expected in traditional chain and independent pharmacies.

Employment in hospitals is also expected to grow slowly, as hospitals reduce inpatient stays, downsize, and consolidate departments. Pharmacy services are shifting to long-term, ambulatory, and home care settings, where opportunities for pharmacists will be best. New opportunities for pharmacists are emerging in managed care organizations, where pharmacists analyze trends and patterns in medication use for their populations of patients. Fast growth is also expected for pharmacists trained in research, disease management, and pharmacoeconomics—determining the costs and benefits of different drug therapies.

Cost-conscious insurers and health systems may continue to emphasize the role of pharmacists in primary and preventive health services. They realize that the expense of using medication to treat diseases and conditions is often considerably less than the potential costs for patients whose conditions go untreated. Pharmacists can also reduce the expenses resulting from unexpected complications due to allergic reactions or medication interactions.

The increased number of middle aged and elderly people will spur demand for pharmacists in all practice settings. The number of prescriptions influences the demand for pharmacists, and the middle aged and elderly populations use more prescription drugs, on average, than younger people.

Other factors likely to increase the demand for pharmacists through the year 2008 include the likelihood of scientific advances that will make more drug products available, new developments in administering medication, and increasingly sophisticated consumers seeking more information about drugs.

Earnings

Median annual earnings of pharmacists in 1998 were \$66,220. The middle 50 percent earned between \$52,310 and \$80,250 a year. The lowest 10 percent earned less than \$42,550 and the highest 10 percent more than \$88,670 a year. Median annual earnings in the industries employing the largest numbers of pharmacists in 1997 were as follows:

Grocery stores	\$67,000
Drug stores and proprietary stores	63,400
Hospitals	62,600
Federal government	61,700

According to a survey by *Drug Topics* magazine, published by Medical Economics Co., average base salaries of full-time, salaried pharmacists were about \$59,700 a year in 1998. Pharmacists working in chain drug stores had an average base salary of about \$62,300 a year, while pharmacists working in independent drug stores averaged about \$56,300, and hospital pharmacists averaged about \$59,500 a year. Overall, salaries for pharmacists were highest on the West coast. Many pharmacists also receive compensation in the form of bonuses, overtime, and profit-sharing.

Related Occupations

Persons in other professions who may work with pharmaceutical compounds are biological technicians, medical scientists, pharmaceutical chemists, and pharmacologists.

Sources of Additional Information

For information on pharmacy as a career, preprofessional and professional requirements, programs offered by all the colleges of pharmacy, and student financial aid, contact:

☛ American Association of Colleges of Pharmacy, 1426 Prince St., Alexandria, VA 22314. Internet: <http://www.aacp.org>

General information on careers in pharmacy is available from:

☛ American Society of Health-System Pharmacists, 7272 Wisconsin Ave., Bethesda, MD 20814. Internet: <http://www.ashp.org>

☛ American Pharmaceutical Association, 2215 Constitution Ave. NW., Washington, DC 20037-2985. Internet: <http://www.aphanet.org>

☛ National Association of Chain Drug Stores, 413 N. Lee St., P.O. Box 1417-D49, Alexandria, VA 22313-1480. Internet: www.nacds.org

State licensure requirements are available from each State's Board of Pharmacy.

Information on specific college entrance requirements, curricula, and financial aid is available from any college of pharmacy.

Physical Therapists

(O*NET 32308)

Significant Points

- Although the effects of Federal limits on reimbursement for therapy services will cause keen competition for jobs during the first half of the projection period, employment is expected to increase over the 1998-2008 period.

- Competition for entrance into physical therapist educational programs is very intense.
- By 2002, all physical therapist programs seeking accreditation will be required to offer master's degrees and above.

Nature of the Work

Physical therapists provide services that help restore function, improve mobility, relieve pain, and prevent or limit permanent physical disabilities of patients suffering from injuries or disease. They restore, maintain, and promote overall fitness and health. Their patients include accident victims and individuals with disabling conditions such as low back pain, arthritis, heart disease, fractures, head injuries, and cerebral palsy.

Therapists examine patients' medical histories, then test and measure their strength, range of motion, balance and coordination, posture, muscle performance, respiration, and motor function. They also determine patients' ability to be independent and reintegrate into the community or workplace after injury or illness. Next, they develop treatment plans describing a treatment strategy, the purpose, and anticipated outcome. Physical therapist assistants, under the direction and supervision of a physical therapist, may be involved in the implementation of the treatment plan. Physical therapist aides perform routine support tasks, as directed by the therapist. (Physical therapist assistants and aides are discussed elsewhere in the *Handbook*.)

Treatment often includes exercise for patients who have been immobilized and lack flexibility, strength, or endurance. They

encourage patients to use their own muscles to further increase flexibility and range of motion before finally advancing to other exercises improving strength, balance, coordination, and endurance. Their goal is to improve how an individual functions at work and home.

Physical therapists also use electrical stimulation, hot packs or cold compresses, and ultrasound to relieve pain and reduce swelling. They may use traction or deep-tissue massage to relieve pain. Therapists also teach patients to use assistive and adaptive devices such as crutches, prostheses, and wheelchairs. They may also show patients exercises to do at home to expedite their recovery.

As treatment continues, physical therapists document progress, conduct periodic examinations, and modify treatments when necessary. Such documentation is used to track the patient's progress, and identify areas requiring more or less attention.

Physical therapists often consult and practice with a variety of other professionals, such as physicians, dentists, nurses, educators, social workers, occupational therapists, speech-language pathologists, and audiologists.

Some physical therapists treat a wide range of ailments; others specialize in areas such as pediatrics, geriatrics, orthopedics, sports medicine, neurology, and cardiopulmonary physical therapy.

Working Conditions

Physical therapists practice in hospitals, clinics, and private offices that have specially equipped facilities or they treat patients in hospital rooms, homes, or schools.

Most physical therapists work a 40-hour week, which may include some evenings and weekends. The job can be physically demanding because therapists often have to stoop, kneel, crouch, lift, and stand for long periods of time. In addition, physical therapists move heavy equipment and lift patients or help them turn, stand, or walk.

Employment

Physical therapists held about 120,000 jobs in 1998; about 1 in 4 worked part time. The number of jobs is greater than the number of practicing physical therapists because some physical therapists hold two or more jobs. For example, some may have a private practice, but also work part time in another health facility. About 1 in 10 physical therapists held more than one job in 1998.

Over two-thirds of physical therapists were employed in either hospitals or offices of physical therapists. Other jobs were in home health agencies, outpatient rehabilitation centers, offices and clinics of physicians, and nursing homes. Some physical therapists are self-employed in private practices. They may provide services to individual patients or contract to provide services in hospitals, rehabilitation centers, nursing homes, home health agencies, adult daycare programs, and schools. They may be in solo practice or be part of a consulting group. Physical therapists also teach in academic institutions and conduct research.

Training, Other Qualifications, and Advancement

All States require physical therapists to pass a licensure exam after graduating from an accredited physical therapist educational program before they can practice.

According to the American Physical Therapy Association, there were 189 accredited physical therapist programs in 1999. Of the accredited programs, 24 offered bachelor's degrees, 157 offered master's degrees, and 8 offered doctoral degrees. By 2002, all physical therapist programs seeking accreditation will be required to offer degrees at the master's degree level and above, in accordance with the Commission on Accreditation in Physical Therapy Education.

Physical therapist programs start with basic science courses such as biology, chemistry, and physics, and then introduce specialized



A physical therapist helps a patient increase range of motion after an injury.

courses such as biomechanics, neuroanatomy, human growth and development, manifestations of disease, examination techniques, and therapeutic procedures. Besides classroom and laboratory instruction, students receive supervised clinical experience. Individuals who have a 4-year degree in another field and want to be a physical therapist, should enroll in a master's or a doctoral level physical therapist educational program.

Competition for entrance into physical therapist educational programs is very intense, so interested students should attain superior grades in high school and college, especially in science courses. Courses useful when applying to physical therapist educational programs include anatomy, biology, chemistry, social science, mathematics, and physics. Before granting admission, many professional education programs require experience as a volunteer in a physical therapy department of a hospital or clinic.

Physical therapists should have strong interpersonal skills to successfully educate patients about their physical therapy treatments. They should also be compassionate and possess a desire to help patients. Similar traits are also needed to interact with the patient's family.

Physical therapists are expected to continue professional development by participating in continuing education courses and workshops. A number of States require continuing education to maintain licensure.

Job Outlook

Employment of physical therapists is expected to grow faster than the average for all occupations through 2008. However, Federal legislation imposing limits on reimbursement for therapy services may continue to adversely affect the job market for physical therapists in the near term. Because of the effects of these provisions, the majority of expected employment growth for physical therapists will occur in the second half of the projection period.

Over the long run, the demand for physical therapists should continue to rise as a result of growth in the number of individuals with disabilities or limited function requiring therapy services. The rapidly growing elderly population is particularly vulnerable to chronic and debilitating conditions that require therapeutic services. Also, the baby-boom generation is entering the prime age for heart attacks and strokes, increasing the demand for cardiac and physical rehabilitation. More young people will need physical therapy as technological advances save the lives of a larger proportion of newborns with severe birth defects.

Future medical developments should also permit a higher percentage of trauma victims to survive, creating additional demand for rehabilitative care. Growth may also result from advances in medical technology which permit treatment of more disabling conditions.

Widespread interest in health promotion should also increase demand for physical therapy services. A growing number of employers are using physical therapists to evaluate worksites, develop exercise programs, and teach safe work habits to employees in the hope of reducing injuries.

Earnings

Median annual earnings of physical therapists were \$56,600 in 1998. The middle 50 percent earned between \$44,460 and \$77,810 a year. The lowest 10 percent earned less than \$35,700 and the highest 10 percent earned more than \$90,870 a year. Median annual earnings in the industries employing the largest number of physical therapists in 1997 were as follows:

Home health care services	\$65,600
Nursing and personal care facilities	60,400
Offices of other health care practitioners	56,600
Offices and clinics of medical doctors	55,100
Hospitals	50,100

Related Occupations

Physical therapists rehabilitate persons with physical disabilities. Others who work in the rehabilitation field include occupational therapists, speech pathologists, audiologists, orthotists, prosthetists, and respiratory therapists.

Sources of Additional Information

Additional information on a career as a physical therapist and a list of accredited educational programs in physical therapy are available from:

☛ American Physical Therapy Association, 1111 North Fairfax St., Alexandria, VA 22314-1488. Internet: <http://www.apta.org>

Physician Assistants

(O*NET 32511)

Significant Points

- The typical physician assistant program lasts about 2 years and usually requires at least 2 years of college and some health care experience for admission.
- Earnings are high and job opportunities should be good.

Nature of the Work

Physician assistants (PAs) provide health care services with supervision by physicians. They should not be confused with medical assistants, who perform routine clinical and clerical tasks. (Medical assistants are discussed elsewhere in the *Handbook*.) PAs are formally trained to provide diagnostic, therapeutic, and preventive health care services, as delegated by a physician. Working as members of the health care team, they take medical histories, examine patients, order and interpret laboratory tests and x rays, and make diagnoses. They also treat minor injuries by suturing, splinting, and casting. PAs record progress notes, instruct and counsel patients, and order or carry out therapy. In 46 States and the District of Columbia, physician assistants may prescribe medications. PAs may also have managerial duties. Some order medical and laboratory supplies and equipment and may supervise technicians and assistants.

Physician assistants always work with the supervision of a physician. However, PAs may provide care in rural or inner city clinics



Physician assistants are projected to be among the fastest growing occupations.